

REMARKS/ARGUMENTS

[0100] Please note that since applicant's original application of August 25, 2003, applicant has taken and passed the patent bar. Applicant's Registration Number is 55,875.

[0101] In the specification, paragraph [0004] has been amended to correct minor editorial problems.

[0102] Claims 2 and 10 have been canceled as discussed with the examiner during a phone interview of June 15, 2004. The phone interview is summarized below in section III.

[0103] Claims 16-19 have been added. These claims are dependent claims and specifically claim versions of the invention where the indicators all rotate about the same rotational axis. Each embodiment shown in every figure of the original specification shows that all indicators rotate about the same rotational axis. Therefore Claims 16-19 simply claim a feature already disclosed in the original specification.

[0104] I. Nonobviousness of Configuration

[0105] This section will first address the nonobviousness of applicant's invention with respect to Chaut U.S. Patent No. 5,602,803 (hereinafter Chaut) which was the primary reference used in the 35 U.S.C. 103(a) rejection in the Detailed Action of March 31, 2004 (hereinafter the Action). This section will then address the nonobviousness of the invention with respect to Hartwig U.S. Patent No. 3,668,858 (hereinafter Hartwig). This section will then address the issue of nonobviousness of the invention over the combination of Chaut and Hartwig.

[0106] a. Nonobviousness with respect to Chaut

[0107] As background, the Chaut specification discloses many embodiments that are not claimed. It is important to note that the Chaut patent cited for rejection contains only one independent claim, which states in part:

1. An apparatus for the display of time, comprising:

...

(b) a driven worm gear having external teeth, said worm gear being on a primary rotatable rod ...

(c) a rigid rotatable plate mounted on said support frame ... said external teeth of said driven worm gear engaging said external teeth of said plate....

(Col. 8, lines 13-29)

This claim is describing the apparatus shown in figure 21 of Chaut. All other claims in Chaut depend on claim 1. Since a worm gear, which drives a rotatable plate, is claimed in Chaut and the applicant's invention has no such configuration in any embodiment or claim, the language of Chaut *claims* cannot form the basis of a 35 U.S.C. 103(a) rejection. Accordingly, the remainder of this analysis will address the nonobviousness of the applicant's invention over various Chaut designs described in the specification. It is important to note that the various configurations contained in the Chaut specification are not true embodiments of the Chaut claimed invention. Only one of the several designs described in the Chaut specification contains a worm gear. Since a worm gear is clearly claimed in all Chaut claims, the designs that do not feature a worm gear are not true embodiments of the claimed invention. The designs described in the Chaut specification are more like arbitrary designs independent of the claims placed in the specification for other purposes. However, for simplicity, the different Chaut designs will nonetheless be referred to as Chaut embodiments.

[0108] The Action states on page 2 that Chaut first rigid member 14 "has a demarcation to represent the hour." Applicant asserts that this is an incorrect statement. The use of the singular is incorrect since Chaut does not teach a member with a single marking. All

embodiments of Chaut contain members with multiple markings. The Chaut specification only speaks to members with markings (plural). All Chaut figures show hour indicators with multiple markings. The specification states in numerous places that the annular members contain markings (plural). For example, Chaut uses the word “markings” to describe the invention in Chaut column 1, line 52 and at Chaut column 1, lines 60 and 61. Chaut claim 1 similarly states “the position of said markings being the sole indication of time.” Therefore, the Action incorrectly states that Chaut “has a demarcation to represent the hour.” Chaut contains demarcations that represent the hour, not a single demarcation to represent the hour. This difference is significant and is discussed further in section II below.

[0109] The Action states on page 2 that the Chaut design allows “the hour to be interpreted using traditional clock interpretation means.” The use of this phrase, which was contained in applicant’s original application and was defined by applicant in his original application, is inappropriate to describe the functionality of the Chaut design. This issue is independent of the argument made in this section and is discussed in detail in section II below.

[0110] The Action, on pages 2-3, notes that Chaut teaches an hour indicator and a seconds indicator. The Action does not speak of a minute indicator. However, the Action incorrectly identifies second rigid member 104 as a seconds indicator. The confusion is understandable due to the unfamiliarity of the Chaut design when compared to a traditional two-handed clock. In actuality, member 104 is used represent minutes, not seconds. Rigid member 105 is allegedly used to indicate seconds.

[0111] Chaut embodiment shown in figure 6e, as with all Chaut embodiments, has a single driven output shaft (not explicitly numbered). No multiple driven output shafts are discussed in the specification or claimed. For example, Chaut uses the term “a driven gear” to describe the invention in column 1, line 47 and at column 1, line 56. Chaut directly states that the embodiment in figure 6e contains “a single driven gear.” Chaut column 5, line 50. This single driven gear places many limitations on the Chaut embodiments, which are not present in applicant’s invention. In the Chaut embodiments where annular rings indicate time, the Chaut specification, in text or in figures, never speaks of multiple driving gears or substantially equal-

sized time indicators. Furthermore, applicant's invention utilizes annular rings rotating at different rates about the same rotational axis. The Chaut design is incapable of producing indicators that rotate at different rates around the same rotational axis.

[0112] Another limitation is the inability for the Chaut design to indicate minutes or seconds in a precise manner. The Chaut specification states, "Tertiary plate, **105**, may, for example, be used to indicate seconds, and the like." Chaut column 5, lines 53-55. However, a close examination of Chaut figure 6e, to which the sentence is referring, reveals the inherent problems in the Chaut design. Minute indicating member **104** makes a full rotation every three hours. A careful examination of the figure reveals that the minute indicator has approximately 36 internal teeth. If the minute indicating member **104** fully rotates every 3 hours, the small driven gear **52**, which has 12 external teeth, must be rotating at a rate of one full revolution once every hour. Further examination shows that the tertiary plate **105** has 24 internal teeth, which means that it would rotate at a rate of one full revolution every two hours. Chaut indicates that **105** could be used to indicate seconds, however, a ring which makes a full revolution every two hours is not a practical indicator for seconds. In fact, such an indicator moves more slowly than the minute hand in a traditional clock, which makes a full rotation every hour.

[0113] Applicant acknowledges that the figures in Chaut are used for illustrative purposes and need not show exactly how the embodiment would appear, but the above analysis does reveal a shortcoming of the Chaut, single driven shaft design. The embodiment in Chaut figure 6e features an hour indicating ring **14** that rotates once every 12 hours. To have a minute indicating ring ride on the same output shaft and rotate once per hour, the diameter of that ring would have to be about one twelfth the diameter of hour indicating ring **14**. To avoid this problem, Chaut configured the minute indicating ring **104** to rotate fully once every three hours, thereby enabling the ring to be larger and easier to read. This required the minute indicator ring **104** to be one-third the size of the hour indicating ring **14**. To make a seconds indicator ring that would rotate once per minute, that ring would have to be about 1/60th the diameter of a ring 1/12th the diameter of the hour indicator ring **14**, or 1/720th the diameter of the hour indicator ring **14**. Therefore it is a severe limitation of the Chaut design that it would be very difficult to

make an minute indicator ring which would rotate once an hour and practically impossible to make a seconds indicator ring that would rotate once per minute.

[0114] In the Action, the examiner acknowledged that the Chaut embodiments only cover a single driven gear when the Action states at the top of page 3, "The Chaut apparatus rotates a plurality of time indicators using a single driven gear 52."

[0115] In contrast, applicant's invention solves the problem of difficult-to-read or less-precise minute and second indicators by using minute and second indicators that are substantially the same size as the hour indicator. These large (relative to the hour indicator), easy-to-read indicators, rotating at different rates, avoid a basic problem inherent in the Chaut design and represent an inventive step. Here, the claim of easier-to-read indicators is not based on the method of time interpretation, rather it is based on the facts that applicant's minute and second indicating members are larger relative to the hour indicating member (being substantially the same size) and that applicant's minute and second hands rotate at a faster rate (once per hour and once per second respectively). Applicant asserts that reading the Chaut design embodied in Chaut figure 2a is similar to reading a traditional two-handed clock without the minute hand. The clock can be read, but the reading will be significantly less precise than a reading of a traditional clock with an hour hand and a minute hand. The embodiment shown in Chaut figure 6e is not an improvement in time interpretation precision and falls short of the level of precision available in a traditional two-handed clock. This is primarily due to the relatively small size of the Chaut minute indicator **104** and the fact that the Chaut minute indicator **104** only rotates at a rate of once every three hours. If the Chaut minute indicator **104** were made to rotate once per hour, it would be much smaller and correspondingly more difficult to read. If it were made to be the same size as the hour indicator **14**, it would rotate at the same rate as the hour indicator **14** and would be superfluous. Therefore the addition of a minute ring, no matter what its size, which is driven by the same gear **52** as the hour ring **14** yields no improvement in time communication precision. Applicant's embodiments contain no such limitations to interpretation precision because the use of similarly sized indicators along with multiple drive gears renders applicant's invention equal in time interpretation precision to a traditional two-handed clock.

This analysis is independent of the manner in which time is interpreted, but rather examines the interpretation precision.

[0116] The Action next discusses the embodiment of the Chaut design shown in Chaut figures 2a through 2d. Although the Chaut design of a single driven gear **112** with two different diameters **20 22** would allow for the same size plate **14** to be rotated at two different speeds, the difference in rotational speed is only 2 to 1, i.e. on one part of the gear **20** the plate would rotate every 12 hours, and on the other part of the gear **22**, the plate would rotate once every 24 hours. The embodiment only contemplates one indicating ring **14** and does not reveal a minute indicator. Even if one were to consider the embodiments shown in Chaut figures 2a through 2d in light of the embodiment shown in Chaut figures 6e and 6f, the Chaut design would still require a different sized ring to indicate minutes and would still have the unaddressed problem of having to have a seconds indicator that would be rotating at a speed 720 times faster (1440 times for a 24 hour version) than the hour indicator. This limitation of the Chaut design is not present in applicant's invention.

[0117] The Action, on page 3, next states that the Chaut time apparatus is set by the "manual placement of the annular rings." Applicant acknowledges that the Chaut design could be set by manually placing annular rings and has withdrawn his corresponding claims.

[0118] In the Action, the Examiner acknowledges that, "Chaut does not explicitly teach multiple drive shafts and multiple drive wheels..." Applicant asserts that Chaut does not explicitly or implicitly teach multiple drive shafts and multiple drive wheels and that Chaut actually teaches away from multiple drive shafts and multiple drive wheels. In light of the serious technical problems caused by only having one drive shaft or drive wheel as discussed above, it is unreasonable to assume Chaut taught multiple drive shafts or drive wheels (explicitly or implicitly) which would have solved the technical problems, yet disclosed no embodiment discussing multiple drive shafts or drive wheels.

[0119] The construction of the Chaut patent reveals many incongruities. It is important to note that most of the specification reveals embodiments that are not claimed and that the only embodiment claimed is that shown in Chaut figure 21, the embodiment that contains the plate

driven by the worm gear. The non-claimed embodiments should be construed very narrowly and should not be used in combination with other references to form a basis for a 35 U.S.C. 103(a) rejection. This is because the Chaut embodiments not claimed are suspect in their performance and technical feasibility. The aforementioned seconds indicator **105** of Chaut figure 6e, described in the specification as a member to display seconds yet only rotates once every two hours is an example of an embodiment with very poor functionality. The embodiment disclosed in Chaut figures 4a and 4b is most likely non-functional. The gear **212** used to drive member **114** would result in the member **114** having a tooth configuration, which could not be used to then drive member **30**. Even if the configuration is not impossible, the specification in no way discloses how such a configuration could work. If the configuration in Chaut figure 4a and 4b and described in the specification at Chaut column 4, lines 44-56, were claimed, it would have been rejected for lack of description and/or lack of enablement under 35 U.S.C. 112 paragraph 1. These technical and feasibility issues of Chaut should result in Chaut being considered a poor reference and Chaut should be as narrowly construed as possible, resulting in not allowing the Chaut reference to implicitly teach items such as multiple drive shafts, multiple drive wheels, or multiple equally-sized indicators.

[0120] The above discussed limitations also apply to the embodiments shown in Chaut figure 6b and described in Chaut column 5, lines 38-47. Similar to the Chaut embodiments discussed above, the minute indicator **104** rotates once every three hours. To make a minute indicator that rotates once every hour, as in applicant's invention, the Chaut minute indicator would have to have an outer circumference one-twelfth on the inner diameter of the Chaut hour member **14**. Chaut does not teach a member that indicates seconds in this embodiment. Applicant's invention does not possess this limitation. Applicant's large, easier-to-read indicators, rotating at different rates, avoid a basic problem inherent in the Chaut design and represent an inventive step. The arguments made above distinguishing applicant's invention from Chaut with regard to applicant's embodiment shown in applicant's figure 1 are applicable to distinguish the embodiment shown in applicant's figure 13 from the Chaut specification.

[0121] b. Nonobviousness with respect to Hartwig

[0122] The Action discusses Hartwig in one sentence which states on page 3, in part, “Hartwig teaches a clock comprising a plurality of clear (transparent) disks defining a minute demarcation 17, an hour demarcation 44, and a second demarcation 29 indicator ... driven by a gear wheel 57....” Applicant notes that the use of clear parts with indicators for hours, minutes and seconds was not contained in any independent claim in his original application. In fact, only two of applicant’s original fifteen claims made mention of clear parts. Both of the claims containing references to clear parts were dependent claims. Therefore, applicant asserts that the invention contained in the independent claims is nonobvious over Hartwig. Applicant’s addition of clear members to his independent claims in his dependent claims does not allow applicant’s invention to be rejected as obvious in light of the clearness disclosed in Hartwig. In other words, Hartwig has not patented clearness and applicant does not claim that clearness is essential to show novelty and nonobviousness.

[0123] c. Nonobviousness with respect to Chaut in view of Hartwig

[0124] The Action states, on page 3, “It would have been obvious to a person skilled in the art at the time of the invention to not only adapt rigid members of the Chaut reference to be clear as taught by Hartwig....” This statement implies that applicant’s invention is basically Chaut with clear members. However, only two of applicant’s fifteen claims mention clear members and those claims are dependent. Also, five of the seven embodiments disclosed in figures in applicant’s application do not have clear members. Therefore the statement in the Action on page 3 that applicant’s design is simply Chaut members made clear under Hartwig is in error. The above analysis in section I-a detailed how applicant’s invention is nonobvious with respect to Chaut and that analysis is independent of the opacity of the time indicating members. Therefore, the addition of clearness via Hartwig to reject applicant’s application is inappropriate.

[0125] The sentence on page three of the Action continues and states that it would have been obvious to a person skilled in the art at the time of the invention “...to also provide a

plurality of drive shafts and drive wheels to control said plurality of rigid members in order to provide the user with more control of manual [sic] setting the display.”

[0126] First, the Chaut design shown in Chaut figure 6e is very simple to set. The user simply hangs the rigid members **14**, **104** and **105** onto the driven gear **52** in the appropriate manner to indicate the current time. It is difficult understand how providing a plurality of drive shafts and drive wheels to control a plurality of rigid members will enhance the process of manually setting the display. Comparing Chaut figure 6e with applicant’s figure 3 reveals that each design requires three members to be manually placed to set the display. In applicant’s design, each member must be placed on its corresponding drive wheel in order for the time to be properly displayed. The members must be placed precisely on the drive wheels, whereas the Chaut design simply requires member placement somewhere on the drive shaft **52**, in any order. Therefore, it is an error to state that applicant’s design allows for more control of manually setting the display.

[0127] Second, allowing for different amounts of control of manually setting the display is a different argument than design differences which allow more precision in interpreting the time display. As discussed above in section I-a, applicant’s design does not have the limitations of the Chaut design. The Chaut design, using a single driven gear, requires that the hour, second and minute indicators be of different sizes, which in turn reduces the precision with which the time can be interpreted. The minute indicator ring **104**, which rotates fully once every three hours, is an example of the loss of precision inherent in the Chaut designs. A small ring rotating once every three hours is simply not as precise an indicator as a larger ring rotating once every hour.

[0128] The differences between the Chaut design and applicant’s invention are nonobvious. The addition of multiple drive wheels is totally unsuggested by Chaut. Chaut realized that a single drive wheel presented problems that were partially mediated by having the minute indicating member **104** rotate once every three hours instead of once per hour. However, this feature represents a trade-off. If the minute indicator **104** were made to rotate once per hour, it would be more difficult to read. If the minute indicator **104** were made larger, its slower rate

of rotation would lessen precision. For example, if the minute indicator ring **104** were to be the same size as the hour indicator ring **14** it would contribute no additional precision to time interpretation over the hour indicator ring **14**, and would be the equivalent of a traditional two-handed clock with no minute hand, a serious degradation of precision.

[0129] Despite being aware of this trade-off, as evidenced by Chaut using a minute indicator ring **104** that rotates once every three hours, Chaut never suggested an embodiment with more than one driven gear. If it were in fact obvious to add multiple driven gears, because of the discussed advantages, Chaut would have surely disclosed such an embodiment. The fact that Chaut did not disclose a multiple driven gear embodiment, despite its great advantages, indicates that it is not obvious.

[0130] The Action states, on pages 3 and 4, “Chaut teaches a driven gear comprising two portions of different diameters capable of driving two indicator annular rings, wherein the rings would rotate at different speeds depending on the portion diameter size (FIG. 2a-d).” Applicant asserts that this is a mischaracterization of the Chaut embodiments. First, although the driven gear **112** may be technically capable of driving two indicator rings at different speeds simultaneously, Chaut does not reveal this embodiment. This unsuggested modification of a Chaut embodiment should not be treated as prior art when assessing applicant’s application. Second, the Chaut embodiment that has a driven gear comprising two portions of different diameters is shown in Chaut figures 2a-d and described in Chaut column 4, lines 31-44. Nowhere does Chaut disclose an embodiment that has a driven gear comprising two portions of different diameters *and* multiple annular rings. Chaut either discloses a driven gear comprising two portions of different diameters or a driven gear of one diameter driving multiple, different sized indicator annular rings, such as in Chaut figures 6e and 6f and at Chaut column 5, lines 48-55. Applicant does not suggest that this mischaracterization is critical in determining the nonobviousness of applicant’s invention. Rather, applicant points out the fact that Chaut did not disclose a driven gear comprising two portions of different diameters and multiple annular rings as further evidence that Chaut does not suggest a plurality of drive shafts and drive wheels along with substantially similarly-sized annular indicator rings. Applicant also restates, as discussed

above, that a single driven gear, even one comprising two portions of different diameters, is incapable of yielding a clock which can display the time with the same level of precision as a applicant's invention. This is a separate argument than the argument based on *how* the clock is interpreted. That argument is separate and is made in section II.

[0131] In comparing the applicant's invention shown in applicant's figures 1-4 to Chaut figures 6e-f, the Action states on page 4 that "the clockwork and rings are both present...." However, as discussed above, although both inventions have rings, the rings are not the same. The Chaut rings are necessarily of varying sizes to attempt to display minutes and (questionably as discussed above) seconds on the secondary **104** and tertiary rings **105**.

[0132] The Action continues the sentence on page 4, "...and by utilizing multiple-drive shafts rotating at different angular rates, the rings may be corrected manually by a using much quicker by having individual access to each of the rings [sic]." Applicant's dependent claims that featured the manual repositioning of the rings to set the time have been withdrawn. However, applicant's use of multiple drive shafts rotating at different angular rates was not claimed to be inventive because of the method of time setting that resulted from such a configuration. Rather, the use of multiple drive wheels and substantially equal-sized annular rings in applicant's invention is inventive because it produces a design capable of producing a clock with the level of precision in time interpretation equivalent to a traditional two-handed clock while maintaining a distinctive annular ring configuration. Again, this is a separate argument than the argument based on *how* the clock is interpreted. That argument is separate and is made in section II.

[0133] The last sentence of the body of the Action on page 4 begins, "Also, the transparent members (disks) as taught by Hartwig...." As noted above in section I-b, the independent claims of applicant do not claim transparent members. Therefore it is inappropriate to reject applicant's application on the basis of combining clear elements of Hartwig with Chaut.

[0134] The last sentence of the Action continues, "further illustrate that the method of "hiding" traditional hour, minute, and second hand indicators, instead utilizing disks rotating providing [sic] smaller marking on the outside to indicate a given time are well known in the

art.” The meaning of the quotes around the word hiding in the Action is unclear. Quotes usually suggest a special or non-traditional meaning of a word. Applicant does not claim that any indicator is being hidden. Applicant only claims that in certain embodiments, the drive wheels will be hidden behind rotating plates, such as in applicant’s figures 7-12. Applicant never used the word hiding in his application to describe any of the time indicators. Applicant does not assert that any traditional hour, minute or second hand indicators are being hidden. Rather applicant chose to display time indicators in his embodiments in a format different than that of a traditional two-handed clock. Furthermore, the types of marks used to indicate time on applicant’s embodiments were not claimed. Rather the mechanical configuration of the clock, including the multiple drive wheels, similarly sized annular rings, and/or rotating indicators sharing the same rotational axis, are claimed. Applicant only claimed that the rotating rigid members would have a demarcation to indicate the time. Therefore rejecting applicant’s application on the basis that hands are hidden in a fashion similar to Hartwig is inappropriate.

[0135] The Chaut single driven gear designs are severely limited in their ability to display time with precision when compared to applicant’s invention. Applicant’s use of multiple drive wheels and equally sized annular indicator rings allow applicant’s invention to display the time with a precision equaling that of a traditional two-handed clock while providing a radically different visual appearance. This combination represents a nonobvious inventive step in the field of clocks. The addition of the transparent members of Hartwig to Chaut does nothing to reduce the nonobviousness of applicant’s invention claimed in applicant’s independent claims. And since the independent claims of applicant stand in view of Chaut and Hartwig, adding dependent claims that claim transparent members should also not be rejected. Given the above arguments, applicant’s invention represents a nonobvious improvement over the prior art to a person skilled in the art and applicant respectfully requests that a Notice of Allowance be issued in this case.

[0136] II. Nonobviousness of Display

[0137] The manner in which applicant's invention communicates the current time to the clock interpreter is unique, novel and a nonobvious improvement over the existing state of the art. This section will discuss how it is the current practice of the U.S. Patent and Trademark Office (hereinafter PTO) to grant patents for novel and nonobvious time displays and how applicant's invention satisfies the criteria of the PTO for patentable subject matter.

[0138] a. Patentability of Clock Configurations

[0139] Historically and presently, it is the practice of the PTO to grant patents for time display devices that satisfy the criteria of novelty and nonobviousness. The PTO considers the method of communicating the time to be a patentable invention even in situations where the underlying technology is not novel or nonobvious. Chaut, granted in 1997 is one such patent. The mechanical configuration of the claimed embodiment in Chaut is extremely simple. Claim 1, the sole independent claim, describes a frame, a worm gear, and a rigid plate rotated by the worm gear. In 1997, using a worm gear to rotate a plate was not patentable on its own merit. The inventive aspect of the Chaut claim is that it included markings, which allow the time to be determined by examination of the apparatus. The claim states "said plate featuring markings representing the time" and "wherein said primary rod features minute indications." Chaut column 8, lines 25-29. It was the addition of markings that could be used to interpret the current time that transformed a simple, non-novel, obvious gear arrangement into a novel, nonobvious, patentable clock design.

[0140] Chaut demonstrates that the communication of time is a functional aspect of the design of a clock and therefore novel and nonobvious configurations for the indication of time are patentable. The Action, on page 5, references five patents following the sentence, "The prior art made of record and not relied upon is considered pertinent to applicant's disclosure." The applicant asserts that four of these five patents represent inventions that would not be patentable but for their ability to communicate the time.

[0141] One of the listed patents, Baker U.S. Patent No. 3,934,405 claims in independent claim 1, “a single transparent disc having a reference mark near the periphery thereof” which is attached to “a rotatable central shaft for referencing seconds.” Basically, Baker replaced a traditional second hand with a transparent disk to create the illusion that the indicator is floating around the clock face while indicating seconds. In 1976, spinning a clear disk would not have been patentable subject matter, nor would attaching a disk to a shaft. The inventive step in Baker was using a clear disk in place of a second hand. This was novel and nonobvious because it presented a new and unique way in communicating the time. It was the substitution of a clear disk for the second hand that transformed a simple rotating disk into a novel, nonobvious, patentable clock design.

[0142] Another of the listed patents, Winter U.S. Patent No. 4,428,682, claims in independent claim 1 an hour disc and a minutes disc which rotate about fixed rings at a fixed rate. The positions of the discs are then interpreted to indicate the time. Basically, Winter replaced the hands of a clock with rotating gears which serve the same function as hands in a traditional two-handed clock. In 1984, planet gears and sun gears were well known mechanical components. The novelty and nonobviousness of the Winter design does not stem from its use of planet and sun gears, but of its novel use of planet and sun gears used as time indicators. This was novel and nonobvious because it presented a new and unique way in communicating the time. It was the use of planet and sun gears as time indicators that transformed a known mechanical configuration into a novel, nonobvious, patentable clock design.

[0143] Another of the listed patents, Weiss U.S. Patent No. 4,726,000, claims in independent claim 1 hands of equal length that extend close to a circular minute scale arrangement. The equal length hands have differing configurations so they can be differentiated. Basically, Weiss took the hands of a traditional clock and made them equal length and in close proximity to a circular minute scale arrangement. Although not claimed, the specification states that by having all of the hands in close proximity to the minute scale arrangement, parallax error in the reading of the time is minimized. Weiss, issued in 1998, represents no mechanical invention. Putting something next to something is usually not a patentable innovation.

However, in the field of clocks, the method of communicating the time can be nonobvious even though the underlying mechanical configuration is, on its own, obvious. The novelty and nonobviousness of the Weiss design does not stem from a mechanical configuration, but from its nonobvious time display.

[0144] Another of the listed patents, Truini U.S. Patent No. 5,359,578, claims several different gear arrangements including planet and sun type arrangements. None of the gear arrangements represent patentable gear arrangements. Rather it is the use of markings on the gear arrangements that represent the inventive step necessary for a patent. All of the independent Truini claims describe the patentable subject matter in terms of how the current time information is displayed. One claimed embodiment of Truini is a planet and sun gear where the planet gear has a single mark and the gear ring is marked with several numbers and time can be interpreted from the positions of the gears and marks. In 1994, planet and sun gears were well known, however the unique marking of the gears allowed Truini to be patented over Winter, even though both clocks used planet and sun gears to communicate time.

[0145] The above examples of patents recently issued by the PTO and made of record by the examiner clearly demonstrate that the PTO considers unique methods of indicating time to be patentable even though the underlying mechanical arrangement of the devices are well known. This is because the marking of time keeping devices allows the devices to be used as time keeping devices. In other words, a gear train on its own may not be patentable, but with the addition of markings onto the gear train, the gear train gains the functionality of a clock. This combination of gears and markings on the gears is considered novel and nonobvious by the PTO and the PTO has granted patents, such as those described above, for such inventions.

[0146] Applicant asserts that his invention claims novel, nonobvious methods of communicating the current time and that the methods are nonobvious to one skilled in the art. This assertion is made in light of the patentability of the designs discussed above which do not represent innovative mechanical configurations; they represent innovative methods of communicating time. In the same manner, applicant's invention uses known components, such

as gears driving annular rings or rotating plates, but places the known components in unique configurations and communicates the time in unique, novel and nonobvious manners.

[0147] b. Traditional Clock Interpretation Means

[0148] The Action, on page 2, states that the Chaut apparatus allows the time “to be interpreted using traditional clock interpretation means.” The applicant respectfully disagrees with this assertion. The applicant used the term “traditional clock interpretation means” in the title of his invention and defined the term in paragraph 0003 of his specification. The definition created by applicant, who in a patent is entitled to be his own lexicographer, stated that a traditional clock consists of, among other features, “a number of hands rotating about a central point...” and that the hour hand rotates one revolution every twelve hours and a minute hand rotates one revolution every hour. Therefore to use “traditional clock interpretation means” requires that a user interpret the time where the indicators have their traditional meaning. The traditional meaning is that when the larger indicator (the minute indicator) points straight up, it is interpreted to mean that the time is exactly on the hour. When the larger indicator points straight down, it is interpreted to mean that the time is half past the hour. Traditionally, the smaller indicator will make one full rotation about the common center point once every 12 hours (or 24 hours for a military time clock). When the smaller indicator points straight up, it is interpreted to mean that the time is either 12:00 AM or 12:00 PM. When the larger indicator points straight down, it is interpreted to mean that the time is 6:00 AM or 6:00 PM. Examples of traditionally interpreted clocks are the vast majority of wall clocks and analog wristwatches throughout the world. Specific examples of traditionally interpreted clocks would include the clock on the face of the Old Post Office Tower in Washington D.C. or Big Ben in London, England.

[0149] Applicant asserts that when the examiner to used the phrase “traditional clock interpretation means” on page 2 of the Action while describing how the Chaut clock is read, the examiner radically changed the definition of the phrase *that was defined by applicant*. Since applicant may define a term in any way he sees fit as long as it is not repugnant to the ordinary meaning, the recharacterization by the examiner is inappropriate. There is a clear difference

between how the Chaut design is interpreted as compared to how the applicant's designs are interpreted. Applicant's invention is interpreted using traditional clock interpretation means, whereas the Chaut embodiments are not read using traditional clock interpretation means. This is an objective observation. Apart from the issue of whether or not applicant's embodiments are easier or harder to interpret, it is an objective fact that, like traditional clocks, applicant's embodiments use indicators rotating about a common axis with the hour indicator rotating once every twelve hours and the minute indicator rotating once every hour, whereas the Chaut embodiments do not use possess these traditional characteristics. Since Chaut embodiments lack these characteristics, they are incapable of being interpreted using traditional clock interpretation means.

[0150] Applicant respectfully asserts that neither the claims in the Chaut patent nor any of the embodiments reveal a clock that can be interpreted using traditional clock interpretation means as defined by applicant. All embodiments disclosed in Chaut show rotating numbered members, which require the interpreter to establish what is the significant axis (presumably the top in the embodiment shown in Chaut figure 2a, or the marker 105 in Chaut figure 21). Then the interpreter must count or estimate the relative distance of the significant axis to one of the rotating numbers, determine in what direction the indicator is rotating, and then mentally calculate the time indicated by the Chaut design.

[0151] The direction of rotation of the indicator is not clear in the Chaut embodiment shown in Chaut figures 6e-f, which was the Chaut embodiment directly compared to applicant's invention in the Action. The large annular member 14 must rotate in a clockwise direction to progress from 12 to 3 to 6 and so on. The smaller minute indicating ring 104 must rotate counter-clockwise to progress from 00 to 15 to 30 and so on. However, the same gear 52 is driving both rings. Therefore, the embodiment shown in Chaut figure 6e is not viable unless the interpreter reads an indication of 45 on the smaller minute indicating ring 104 as indicating 15 minutes past the hour. The figure also shows two positions on the larger annular ring 14 that contain the number 6. Applicant asserts that the Chaut patent should be construed extremely

narrowly considering the poor quality of the Chaut reference. In other words, unclaimed Chaut embodiments containing serious design problems should be construed extremely narrowly.

[0152] Distinct from the above argument that applicant's invention requires the use of traditional clock interpretation means whereas the Chaut embodiments do not, is the assertion by applicant that his invention is initially easier to read than the Chaut embodiments. Applicant makes no claim as to whether someone unfamiliar with traditional clocks or the Chaut designs would find one version easier to read than the other. However, applicant does assert that, given the universal familiarity of people with clocks that require the use of traditional clock interpretation means, applicant's invention is significantly easier to interpret than the Chaut embodiments.

[0153] Given the fact that the overwhelming majority of the population of the United States regularly uses traditional clock interpretation means to interpret clocks that they encounter in their everyday life and that applicant's invention also requires the use of traditional clock interpretation means, applicant asserts that the overwhelming majority of the population of the United States would find applicant's embodiments easier to interpret upon first encounter than the Chaut embodiments. Individuals who are familiar with traditional clock interpretation means who first come upon one of applicant's embodiments will recognize the elements that are similar to traditional clocks such as an hour indicator and minute indicator rotating about the same rotational axis. If the minute indicator is pointing directly to the right, the observer will most likely correctly interpret that to mean it is quarter past the hour. The observer will be able to apply his or her familiarity with traditional clocks to applicant's invention and interpret the time.

[0154] Upon first encountering a Chaut embodiment, such as the embodiment shown in Chaut figure 6e, a person familiar with traditional clock interpretation means will have to go through several more steps to interpret the time than needed to interpret applicant's embodiments. First the observer will have to figure out that it is not the position of the indicator relative to a traditional clock face that must be interpreted but the position of a numbered rotating annular ring 14 with respect to some other point. The observer will then need to determine what is the significant axis to be used to determine to what number the rotating annular ring 14 is

indicating. Presumably, the time indicated in Chaut figure 6e is determined by the point of contact between the driven gear **52** and the annular ring **14**. However, Chaut does not explicitly say how the embodiment in Chaut figure 6e is to be interpreted. Chaut does indicate that the embodiment shown in Chaut figures 1a-b can be interpreted by reading the point of contact between the rings **14** and the driven gears **12**. However, there is no overt indication that this is how the Chaut embodiment should be interpreted so it is not a given that the observer will be able to figure out the significant axis used to determine the indicated time in the Chaut embodiment shown in Chaut figure 6e. Without this information, time interpretation is impossible. Furthermore, the process must be repeated to interpret the minute indicator ring **104**.

[0155] Given the deviation of the Chaut embodiments from the traditional clock interpretation means used by the vast majority of the population of the United States, it can be objectively stated that applicant's embodiments will be easier to read by the majority of the population of the United States when the design is first encountered as compared to their first encounter with a Chaut embodiment. The way a clock is interpreted is similar to a language. It is difficult to say if French is easier to learn as a child than English or German, but it is totally legitimate to say that, if one knows English and has never heard French, that individual will have an easier time understanding dialogue in English than dialogue in French. In a similar manner, individuals familiar with traditional clock interpretation means will generally understand applicant's invention easier than any Chaut embodiment.

[0156] c. Chaut Teaches Away from Traditional Clock Interpretation Means

[0157] Applicant respectfully asserts that Chaut does not present any embodiments or make any claims to a clock that is interpreted using traditional clock interpretation means as the term was defined by applicant in his original application. The Chaut patent is titled "Clocks with Unique Time Displays." The title indicates that Chaut is not attempting to create clocks that require traditional clock interpretation means to determine the indicated time. Chaut states that the invention relates "to clocks which display the time in unique and innovative ways." Chaut column 1, lines 7-8. Chaut also states his embodiments satisfy a need for clocks "having no

rotating hands.” Chaut column 1, line 42. The Chaut specification goes on to describe several embodiments, all of which are not interpreted using traditional clock interpretation means. The combination of the title of the Chaut patent, along with several unclaimed embodiments which do not require traditional clock interpretation means to determine the indicated time are evidence that Chaut is purposely avoiding displaying the time in a traditional manner in order to make the disclosed embodiments more unique. This is the essence of teaching away from a particular embodiment.

[0158] Since Chaut teaches away from the use of traditional clock interpretation means to determine the indicated time, Chaut should be construed narrowly. Applicant’s embodiments featuring unique mechanical configurations and indicators that enable traditional clock interpretation means are novel and nonobvious over the Chaut designs. This also holds true if Chaut is combined with the transparent feature of Hartwig and that combination is compared to applicant’s invention. All of applicant’s independent claims include the feature of being capable of being interpreted using traditional clock interpretation means. This feature is a contributor to the novelty and nonobviousness of applicant’s invention. The ability to determine the indicated time using traditional clock interpretation means is a significant difference between Chaut and applicant’s invention. This difference is over and beyond the mechanical differences discussed in section I above.

[0159] d. Crowded Art

[0160] In view of the crowded art and long history of clock design and innovation, applicant requests that the innovation described in applicant’s patent application be regarded as significant. The Chaut apparatus shown in Chaut figure 6e shows a ring supported by a driven gear, which contains some similarities to applicant’s claims. However, the Chaut claims and embodiments all require the clock reader to depart from traditional clock interpretation methods to determine the time that the Chaut apparatus is indicating. This could potentially limit the commercial viability of the Chaut designs. In contrast, the applicant’s designs are immediately recognizable as indicating the current time in a traditional manner, yet with an innovative driving

method and presentation. Given the crowded field, applicant asserts that the uniqueness of the display alone satisfies the criteria of novelty and nonobviousness and that a timely Notice of Allowance should be issued in this case.

[0161] e. Summary of Display Nonobviousness

[0162] As in Truini, Baker, Chaut and others, display configuration novelty and nonobviousness can form the basis for a patent in the field of clocks. Patentable designs may require the use of traditional clock interpretation means and still be patentable. Such was the case in Baker, Winter, and Weiss. Applicant's invention is as novel and nonobvious as any of these other patented clocks. A patent is granted on the claims; the claims are the legal area where standards of novelty and nonobviousness apply. Chaut does not speak of hanging gears and does not attempt to patent an annular ring gear hanging on a driven gear. This is because such a gear configuration was obvious. It is the combination of a mechanical configuration new to the clock art and the display of time that make a new clock configuration patentable. Applicant's invention possesses a mechanical configuration new to clocks, coupled with a novel, nonobvious time display that can be interpreted using traditional clock interpretation means. This combination of factors satisfies the standards of novelty and nonobviousness and subsequently a patent should be granted on applicant's patent application.

[0163] III. Summary of Phone Interview

[0164] On June 15, 2004, at 11:00 AM Eastern time, the examiner and applicant discussed applicant's patent application in a phone interview lasting approximately 40 minutes. The examiner, Mr. Lindinger, answered applicant's questions as to the reasoning behind the use of the Chaut and Hartwig patent in the Action. The examiner reviewed many of the features of Chaut and Hartwig, which he used to make the determination in the Action. The parties also discussed secondary matters such as crowded field and commercial success factors.

[0165] IV. Summary

[0166] The applicant's invention features novel, nonobvious configurations using multiple annular rings or disks driven by separate drive wheels. In the preferred embodiment, the annular rings are substantially equally sized and rotate about the same rotational axis. The term "traditional clock interpretation means" appearing in the claim denotes that the indicators in the embodiments all rotate about the same rotational axis as in traditional clocks. These mechanical differences from prior art are significant, novel and nonobvious.

[0167] The resulting configurations of applicant's embodiments are also far more precise of a measuring instrument than the Chaut designs. This is due to the faster and larger rotating minute and second indicators of applicant's embodiments. When the hour indicators are similarly sized, the larger minute indicators of applicant's designs can be read with more precision than can the smaller, slower rotating Chaut indicators.

[0168] Both the Chaut and Hartwig references are complete on their own, so there is no reason to combine them or use features from one and apply them to the other. The combination is also inappropriate because the addition of transparency or floating from Hartwig is not a significant part of applicant's invention. Applicant in no way relies on transparency for his invention to be patentable. Only two of applicant's seventeen claims mention transparent members.

[0169] The Chaut reference is incomplete in that the specification contains impossible or, at the very least, undisclosed gear arrangements and several errors that make the function of embodiments indeterminable. These errors and shortcomings of the Chaut specification should result in the Chaut specification being construed extremely narrowly. Also, the Chaut reference teaches away from significant features of applicant's claims. Chaut teaches away from multiple drive shafts or drive gears and from time indicators that could be read using traditional clock interpretation means.

[0170] Novel and nonobvious time displays are patentable. Several examples of distinctive displays requiring unique time interpretation methods and traditional clock

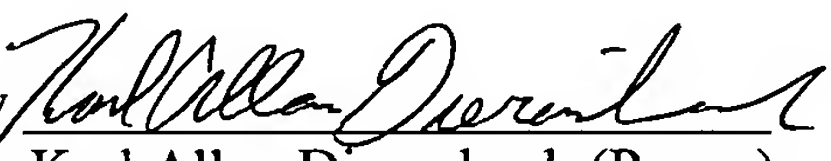
Appl. No. 10/646,214
Amdt. dated June 25, 2004
Reply to Office action of March 31, 2004

interpretation methods were reviewed. Many of these patents had no novel or nonobvious gear arrangement. The patentability for these devices arose from the uniqueness of the displays alone, which satisfied the criteria of novelty and nonobviousness.

[0171] The attribute of applicant's invention that the time can be interpreted using traditional clock interpretation means, as defined by applicant, is a novel and nonobvious feature of his design. It is clear that applicant's embodiments are interpreted using traditional clock interpretation means whereas the Chaut embodiments are not. This is a significant, functional, and nonobvious difference between the two types of clocks.

[0172] Given the mechanical novelty and nonobviousness of applicant's design over the prior art, coupled with the differences in how the time is communicated, applicant's invention represents a novel and nonobvious improvement over the prior art. Accordingly, applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

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